

WHAT IS CLAIMED IS:

1. A method for designing a digital television network, comprising:
correcting a radio predictive model based on information related to an existing
analog television transmitting station;
conducting a link budget analysis based on parameters regarding the existing
analog television transmitting station to determine a minimum required transmitting power;
designating one of a plurality of effective radiated powers calculated by a
regression analysis as a effective radiated power for a digital television transmitting station; and
comparing the designated effective radiated power for the digital television
transmitting station to the minimum required transmitting power.
2. The method according to claim 1, further comprising calculating a coverage zone
of the digital television based on the effective radiated power.
3. The method according to claim 1, wherein the information related to the existing
analog transmitting station includes at least one of information regarding an antenna,
information regarding an effective radiated power, and actual measured data.
4. The method according to claim 1, further comprising analyzing interference
between the digital television transmitting station and an analog television transmitting station.
5. The method according to claim 1, wherein correcting a radio predictive model
comprises:

calculating predicted data for the existing analog television transmitting station
using a model based on information related to the existing analog television transmitting station;
5 comparing the calculated predicted data to actual measured data; and
adjusting the model and repeating the calculating and comparing steps until the
predicted data and the actual measured data are in agreement.

6. The method according to claim 1, further comprising performing a regression
analysis, using a set of digital television transmitting station design parameters, to calculate a
plurality of effective radiated powers required to transmit the digital television signal to required
maximum distances in a corresponding plurality of different transmitting directions.

7. The method according to claim 6, wherein the designating step comprises
selecting the maximum effective radiated power from among the plurality of effective radiated
powers.

8. The method according to claim 7, further comprising:
adjusting at least one of the set of digital television transmitting station design
parameters if the result of the comparing step indicates that the designated effective radiated
power is less than the minimum required transmitting power;
re-calculating a plurality of effective radiated powers required to transmit the
digital television signal to required maximum distances in a corresponding plurality of different
transmitting directions using the adjusted design parameters;

selecting a maximum effective radiated power from among the plurality of re-calculated effective radiated powers;

comparing selected maximum effective radiated power to the minimum required transmitting power; and

repeating the adjusting, re-calculating, selecting, and comparing steps until the selected maximum effective radiated power is greater than the minimum required transmitting power.

9. A method for designing a digital television network, comprising:

calculating predicted data for an existing analog television transmitting station by conducting a radio analysis based on actual measured data for the existing analog television transmitting station;

calculating a minimum required transmission power for a digital television transmitting station by conducting a link budget analysis that is based on parameters regarding the existing analog television transmitting station;

performing a regression analysis, based on design parameters of the digital television transmitting station, to calculate a plurality of effective radiated powers corresponding to different transmitting directions;

selecting one of the plurality of effective radiated powers as an effective radiated power for the digital television transmitting station;

determining whether the selected effective radiated power for the digital television transmitting station is greater than the minimum required transmission power; and

15 designating the effective radiated power as an optimum power for the digital
television transmitting station, if the effective radiated power for the digital television
transmitting station is greater than the minimum required transmission power.

20 10. The method according to claim 9, further comprising calculating a coverage zone
of a digital television transmitting station based on the optimum power of the digital television
transmitting station.

11. The method according to claim 9, further comprising varying at least one of the
design parameters of the digital television transmitting station if the effective radiated
transmitting power is less than the minimum required transmission power.

12. The method according to claim 11, further comprising:
performing a new regression analysis, based on the varied design parameters of
the digital television transmitting station, to calculate a plurality of new effective radiated powers
corresponding to different transmitting directions;

selecting one of the plurality of new effective radiated powers as an effective
radiated power for the digital television transmitting station;

determining whether the selected effective radiated power for the digital television
transmitting station is greater than the minimum required transmission power;

repeating the varying, performing, selecting and determining steps until the
selected effective radiated power is greater than the minimum required transmission power.

13. The method according to claim 9, further comprising analyzing an interference between the digital television transmitting station and a second analog television transmitting station, based on the optimum power for the digital television transmitting station.

14. The method according to claim 9, wherein calculating the predicted data on the first analog television transmitting station comprises:

calculating a coverage zone of the existing analog television transmitting station using predicted data values;

comparing the calculated coverage zone to an actual measured coverage zone of the existing analog television transmitting station; and

varying the predicted data values until the calculated coverage zone substantially agrees with the actual measured coverage zone.

15. A computer readable medium having a set of instruction configured to cause a computer to perform a method for designing a digital television transmitting station, comprising:

correcting a radio predictive model based on information related to an existing analog television transmitting station;

conducting a link budget analysis based on parameters regarding the existing analog television transmitting station to determine a minimum required transmitting power;

designating one of a plurality of effective radiated powers calculated by a regression analysis as a effective radiated power for a digital television transmitting station; and

comparing the designated effective radiated power for the digital television transmitting station to the minimum required transmitting power.

16. The computer readable medium of claim 15, wherein the instructions also cause the computer to calculate a coverage zone of the digital television based on the effective radiated power.

17. The computer readable medium of claim 15, wherein the instructions also cause the computer to analyze interference between the digital television transmitting station and an analog television transmitting station.

18. The computer readable medium of claim 15, wherein the instructions also cause the computer to perform the steps of:

calculating predicted data for the existing analog television transmitting station using a model based on information related to the existing analog television transmitting station;

comparing the calculated predicted data to actual measured data; and

adjusting the model and repeating the calculating and comparing steps until the predicted data and the actual measured data are in agreement.

19. The computer readable medium of claim 15, wherein the instructions also cause the computer to perform a regression analysis, using a set of digital television transmitting station design parameters, to calculate a plurality of effective radiated powers required to transmit the digital television signal to required maximum distances in a corresponding plurality of different transmitting directions.

15 20. The computer readable medium of claim 15, wherein the instructions also cause
the computer to perform the designating step such that the maximum effective radiated power
is selected from among the plurality of effective radiated powers.

20 21. The computer readable medium of claim 15, wherein the instructions also cause
the computer to perform the steps of:

adjusting at least one of the set of digital television transmitting station design
parameters if the result of the comparing step indicates that the designated effective radiated
power is less than the minimum required transmitting power;

25 re-calculating a plurality of effective radiated powers required to transmit the
digital television signal to required maximum distances in a corresponding plurality of different
transmitting directions using the adjusted design parameters;

selecting a maximum effective radiated power from among the plurality of re-
calculated effective radiated powers;

30 comparing selected maximum effective radiated power to the minimum required
transmitting power; and

repeating the adjusting, re-calculating, selecting, and comparing steps until the
selected maximum effective radiated power is greater than the minimum required transmitting
power.